

REMARKS/ARGUMENTS

This is in full and timely response to the Office Action dated October 18, 2006. The Examiner is respectfully requested to reconsider and withdraw the rejections made in the last Office Action based on the above amendments and the following remarks.

By this Amendment, claims 3 and 17 have been cancelled, claims 1 and 15 have been amended, and new claim 43 has been added. Claims 1, 4 to 15, 18 to 28 and 43 remain pending for the Examiner's reconsideration.

Specification

Amendments have been made to the specification to correct minor informalities, including a reference numeral correction and a grammatical correction. No new matter has been added by these amendments.

Drawings

A separate Letter to the Official Draftsperson is being filed herewith to submit a replacement sheet for Fig. 1 of the drawings to make corrections to the reference numerals. Specifically, reference numeral "23" in the original Fig. 1 has been changed to --25--, and reference numeral "25" in the original Fig. 1 has been changed to --27--. Support for these changes can be found, for example, on page 15, lines 2 to 7, and page 19, lines 3 to 7, of the original specification.

Rejection of Claims 1, 3 to 7, 15 and 17 to 21

Claims 1, 3 to 7, 15 and 17 to 21 stand rejected under 35 U.S.C. 103(a) as allegedly being unpatentable over Nakao et al. (U.S. Patent No. 6,272,097) in view of Misawa et al. (U.S. Patent No. 4,876,680). Of these claims, only claims 1 and 15 are independent claims. Each of the independent claims 1 and 15 have been amended by this amendment to include the subject matter of claims 3 and 17, respectively, and claims 3 and 17 have been cancelled.

The Examiner contends that Nakao et al. disclose the claimed invention, except for the claimed light source being perpendicular to the optical member. The Examiner relies upon Misawa et al. for a teaching of this feature. To the extent that this rejection might still be applied to the amended claims, it is respectfully traversed for the following reasons.

Nakao et al. discloses an optical head apparatus having a light source 1 and photo detector elements 3 integrated on the same transparent substrate 2. The light source 1 is a semiconductor laser beam source with an active layer 209 extending from the substrate 2. A first transparent layer 4 is laminated on the opposite side of the substrate 2 from the light source 1, and a diffraction grating 5 is formed on the bottom of the first layer 4. A second transparent layer 6 is laminated below the grating 5, and a quarter-wave plate 7 is formed on the lower surface 6a of the second layer 6. A third transparent layer 8 is laminated on the lower surface of the plate 7, a grating lens 9 is formed on the lower surface of the layer 8, and a fourth transparent layer 10 is laminated on the lower surface of the grating lens 9. A number of embodiments having this basic structure are disclosed by Nakao et al.

Nakao et al. fail to disclose some of the significant features of the Applicants' invention. For example, the light source 1 in Nakao et al. is not attached to a face of the optical member 4-8, which is perpendicular to the two faces of the optical member 4-8 attached to the substrate 2 and the "objective lens." Instead, the light source 1 in Nakao et al. is attached only to the substrate 2, not the optical member 4-9. The light source 1 in Nakao et al. is not attached to a perpendicular face of the optical member 4-8 as in the Applicants' claimed invention, nor would a modification of Nakao et al. to include such an arrangement have been obvious. The plasma CVD and sputtering manufacturing techniques disclosed by Nakao et al. for making the layers 4-9 would not have been seen as allowing the claimed perpendicular arrangement of the light source 1, as in the Applicants' claimed invention. Specifically, it would not have been considered obvious or feasible to modify the device of Nakao et al. to attach the light source 1 to a face of the optical member 4-8 that is perpendicular to the face of the optical member attached to the substrate, as in the Applicants' invention.

Moreover, Nakao et al. does not teach or suggest the additional limitations added to independent claims 1 and 15 by this amendment concerning the arrangement of the light source being attached to the substrate and to the optical member, nor the claimed anticorrosion means covering the light source after it is attached to the optical member. The anticorrosion means and its advantages are described in the Applicants' original specification at page 24, line 6, through page 25, line 13.

The Examiner contends that Nakao et al. discloses that a surface of the light source 1, which is exposed to the outside while the light source 1 is attached to the optical member, is

covered with anticorrosion means. The Examiner refers to Figs. 4A to 6B and column 6, lines 24 to 49, in Nakao et al. in support of this contention. However, the light source 1 in Nakao et al. is not attached to the optical member 4-8, as claimed; it is attached to the substrate 2. Further, the specific portions of Nakao et al. referenced by the Examiner are directed to a process for making the semiconductor light source 1, not for attaching it to the optical member or the substrate 2. The various insulating film layers described by Nakao et al. are part of the semiconductor manufacturing process used to form the light source 1, and cannot be construed as the claimed anticorrosion means covering the exposed surface of the light source attached to the optical member.

It is also noted that the Examiner has relied on the Fig. 13 embodiment of Nakao et al. for a teaching of the claimed objective lens. However, the objective lens 26 in Fig. 13 of Nakao et al. is not attached to a face of the optical member in close contact therewith and without a gap left therebetween, as claimed. Instead, an actuator 27 is used in the Fig. 13 embodiment of Nakao et al. to move the objective lens 26 separate from the element 103. As such, it is clear that the objective lens 26 is not in close contact with the face of the optical member without a gap therebetween, as claimed.

Misawa et al. does not teach or suggest an obvious modification of the device of Nakao et al. that would result in the Applicants' claimed invention. Misawa et al. discloses an optical pick-up for use in an information recording and reproducing apparatus. The optical pick-up includes a semiconductor laser 11 as a light source, an optical waveguide element 13, a quarter wavelength plate 14, and an objective lens 15, all of which are spaced apart from each other (see

column 4, lines 12 to 17). The optical waveguide element 13 includes an opaque substrate 16, a buffer layer 17 formed on top of the substrate, and an optical waveguide layer 18 formed on the buffer layer 17.

The Examiner has specifically relied upon the Fig. 9 embodiment of Misawa et al. for a teaching of a light source 11, which is "perpendicular to the optical member." However, Misawa et al. does not teach an arrangement in which the light source 11 is attached to the optical member 13, and certainly not one in which the light source 11 is attached to a perpendicular face of the optical member 13 "without a gap left therebetween." While the plane mirror 80 in Fig. 9 of Misawa et al. does allow the light source 11 to be positioned to the side of the optical member 13, it does not provide an arrangement in which the light source 11 is in close contact with the optical member 13 without a gap left therebetween. It is respectfully submitted that neither Nakao et al. nor Misawa et al. teach or suggest this feature of the Applicants' invention, nor how such a modification of Nakao et al. could have even been accomplished without a totally different construction and without the benefit of hindsight using the teachings found in the Applicants' disclosure.

The remaining claims 4 to 7 and 18 to 21 depend upon independent claims 1 and 15, and are therefore patentable for at least the same reasons explained above, and for the specific combinations stated in these dependent claims.

Accordingly, the Examiner is respectfully requested to reconsider and withdraw the rejection of claims 1, 4 to 7, 15 and 18 to 21 based on Nakao et al. in view of Misawa et al.

Rejection of Claims 8 to 14 and 22 to 28

Claims 8 to 14 and 22 to 28 stand rejected under 35 U.S.C. 103(a) as allegedly being unpatentable over Nakao et al. in view of Misawa et al., and further in view of Crane et al. (U.S. Patent No. 6,078,473). The Examiner contends that the combined teachings of Nakao et al. and Misawa et al. teach the claimed invention, except for the various additional details described in dependent claims 8 to 14 and 22 to 28. The Examiner relies upon Crane et al. for a teaching of these features.

This rejection is respectfully traversed for at least the reason that all of claims 8 to 14 and 22 to 28 depend upon independent claims 1 and 15, which are patentable over the cited references for the reasons explained above. As such, claims 8 to 14 and 22 to 28 are also patentable for at least these same reasons.

New Claim 43

New claim 43 has been added to claim the Applicants' invention in a slightly different manner for the Examiner's consideration. Claim 43 recites, among other things, that the optical member includes a polarizing beam splitter, and that the light source is in close contact with a side face of the polarizing beam splitter without a gap left therebetween. Support for the new limitations in claim 43 can be found, for example, on pages 19 and 20 of the Applicants' specification. Claim 43 is believed to be patentable over the cited references for generally the same reasons explained above regarding Applicants' claims 1 and 15 (except that claim 43 does not recite an anticorrosion means, as in claims 1 and 15).

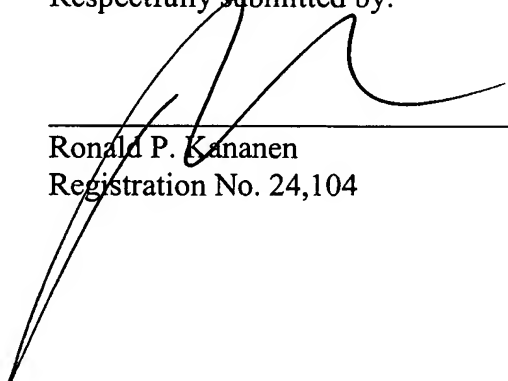
Conclusion

For at least these reasons, it is respectfully submitted that the Applicants' claimed invention, as presented in the amended claims herein, would not have been obvious based on the combined teachings of Nakao et al., Misawa et al. and Crane et al. Accordingly, the Applicants respectfully submit that all of the pending claims 1, 4 to 15, 18 to 28 and 43 are now in condition for allowance, and request that a timely Notice of Allowance be issued for this application.

If the Examiner has any comments or suggestions that could place this application into even better form, the Examiner is encouraged to contact the Applicants' undersigned representative at the telephone number listed below.

Respectfully submitted by:

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Ronald P. Kananen
Registration No. 24,104

RADER, FISHMAN & GRAUER, P.L.L.C.
1233 20th Street, N.W., Suite 501
Washington, D.C. 20036
Telephone: 202-955-3750
Facsimile: 202-955-3751
Customer No. 23353

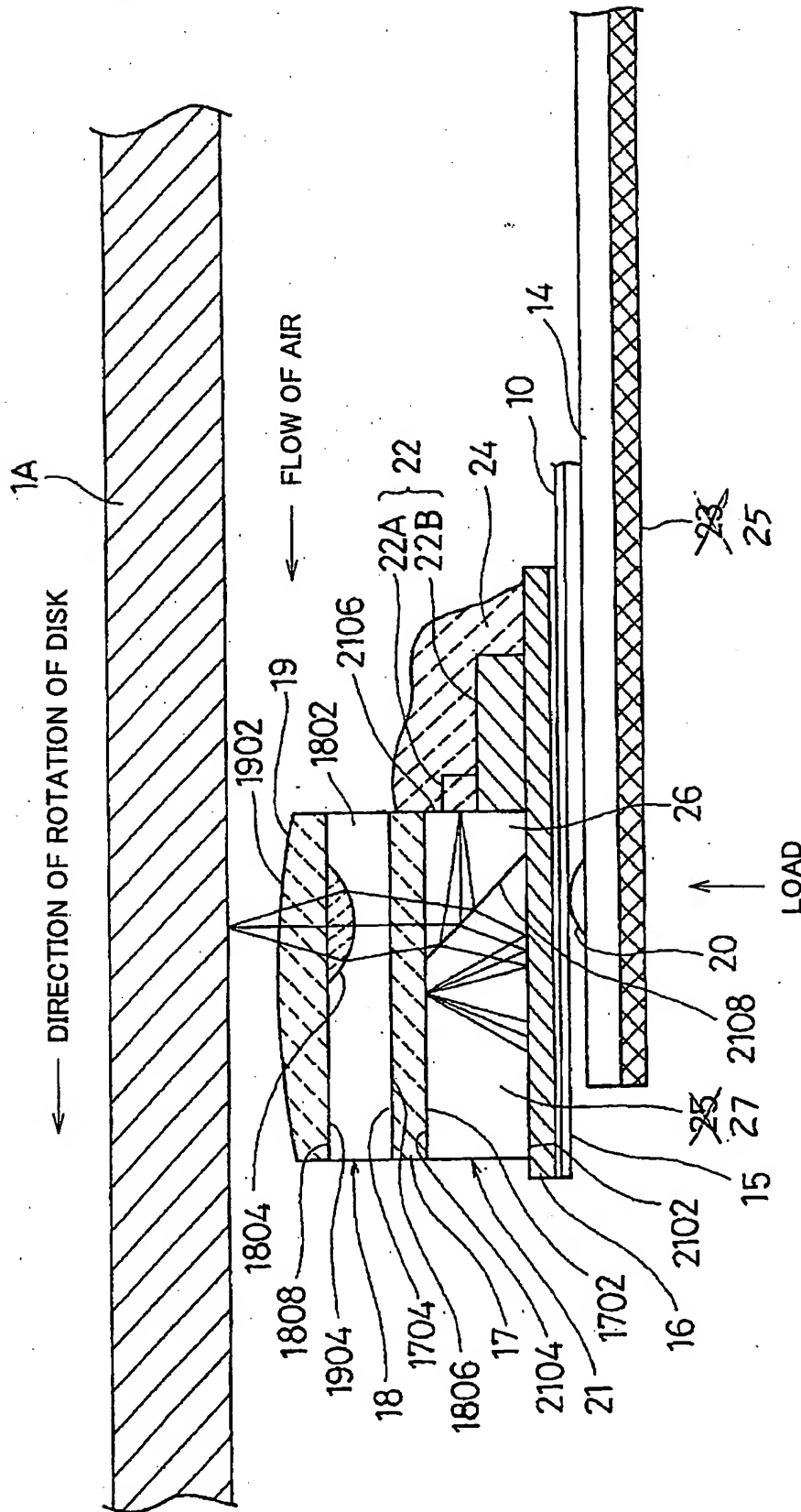


Fig.1